Research for Health

Policy briefings

Why health research?

Council on Health Research for Development

Global Forum for Health Research

COHRED and Global Forum: Why this new, joint series?

The Global Forum for Health Research was set up in 1998. Its main aim is to promote more health research focused on the needs of developing countries. Its well-known annual meeting is the only international forum specifically to address health research for development. The Global Forum studies and analyses the flow of resources for health research at global and national levels, identifying and advocating the closure of gaps; develops tools for policy-makers and researchers, including in research priority setting and in equity analysis; and works with partners to set the research agenda for neglected areas. More information is available from http://www.globalforumhealth.org

COHRED, the Council on Health Research for Development, was initiated in 1993. Its main aim at that time was to promote Essential National Health Research in all countries, no matter what the status of economic development. COHRED's work has since expanded, in broad terms, to do all that is needed to strengthen national health research systems, so countries can optimize the use of health research for equity and development. COHRED engages in many activities around the globe but prioritizes work in the lowest-income countries. More information can be obtained from http://www.cohred.org

The reason why COHRED and the Global Forum are embarking on this new, joint series of publications is that the two organizations pursue the same aims through different means. We also feel that there is a major gap in providing relevant information on research for health to key decision-makers in governments in both developing and developed countries and among research sponsors, donors and collaborators. This series intends to provide highlights in a concise format. After this first edition, we will invite key contributors to address substantive issues that are of immediate relevance to action. We believe that global, regional and national perspectives are needed to provide optimal information for action.

We welcome suggestions for improvement.

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Why Health Research?

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to promote rational decision-making in health research for development

The importance of health – and whose responsibility

Health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease" (World Health Organization). It is not surprising, therefore, that good health is high on the list of aspirations of people everywhere. And it is appropriate that health is recognized as a human right in a wide range of global conventions and treaties, including the Universal Declaration of Human Rights, and in national constitutions and policy. As a consequence, policy-makers everywhere have a fundamental responsibility to protect and promote the health of the individuals and populations they serve. It is also in their best interests, as neglect of health care and of public health is becoming an increasingly important reason for changes in government in democratic countries.

The case for action to support and improve health is strengthened by the recognition, which has been growing in recent years, of the intimate links that exist between health and development. Until recently, improvements in health were mostly seen as an outcome of development – a beneficial effect for the individual that flows from decreasing poverty and increasing opportunities for more education and better living conditions. More recently, since 1993, it has become widely accepted that better health is a necessary element of development and that investments in health have become essential to economic growth policies that seek to improve the lot of poor people (World Bank, 1993; World Health Organization (WHO) Ad Hoc Committee, 1996; WHO Commission, 2001). Indeed, investments in health have been demonstrated to yield higher rates of return than virtually any other investments that a government can make (WHO Commission, 2001) and to be an indispensable component of any national strategy aiming to support poverty alleviation and reduce inequities. Health as a core component of human development was most clearly described by Amartya Sen in his book *Development as Freedom* (Sen, 2000).

In this context, considerations of health equity (linked to the concepts of "fairness" or "justice", rather than "equality") are central, whether health is viewed from a rights, a public health or an economic development perspective. Promotion of equity requires ensuring that all people, regardless of ability, ethnicity, gender, location, race or social standing, have adequate protection against the factors that cause ill-health; have access to knowledge, products and services that will enable them to reduce risk factors and obtain advice and treatment; and are not prevented by lack of resources or by other obstacles from utilizing what is available to achieve and maintain good health and optimal self-development.

This breadth of requirements points to a crucial aspect of health: its determinants do not reside only in the health sector and the achievement of good health requires attention to a wide range of factors that go far beyond the creation of knowledge, technologies and services that aim to treat diseases. Among others, the factors that determine adequate levels of education and access to decent and secure employment, nutrition, transport, clean water and sanitation, and legal protection of rights are also all of great importance as determinants of health, as are macro-factors such as good governance, democratic systems and economic equity and growth. Thus, the responsibility for health rests not only with policy-makers working directly in the health sector but is shared by all policy-makers in government and in the international agencies that influence global policies on a wide range of issues such as trade, the environment, intellectual property, law, human rights, aid and the financing of development. Similarly, decision-makers in sectors not normally considered part of the health sector need to take the health consequences of their actions into serious consideration. The grave health effects, especially in the poorest nations, of structural adjustment policies developed by global financial institutions are a key example of policy development without consideration of the negative impact on health.

Research as a central and indispensable component of improving health

Applying what is already known

It is often said that much ill-health and many millions of deaths annually could be avoided "simply" by applying the knowledge and tools that already exist. There is considerable justification for this claim, as is outlined in the following examples:

- First and foremost, policies for improving the health of populations must seek to adopt and implement the knowledge and tools that are already available – closing what has been referred to as the "know-do gap" – and invest in the type of research needed to understand the factors that keep this gap open. Often, only at country-level will it be possible to address these factors given the enormous variety of systems, cultures, traditions, political institutions and health-care delivery capabilities.

- The type of research needed does not require resourcing on a scale comparable with that necessary for the development of new drugs. It does, however, require qualitative and quantitative research capacity to engage in a variety of research methods, including research that uncovers the nature and extent of underlying health problems and their root causes (including determinants in and beyond the health sector); examines the relevance and transferability of knowledge and tools developed elsewhere; experiments with adaptations to local conditions and contexts; explores the scaling-up and sustainability of interventions; monitors and evaluates the effectiveness of interventions and the degree to which they are successful; measures the efficiency and cost-effectiveness of all elements in the process; and explores social, economic, national and international obstacles to closing this gap and attempts to find solutions.

The need for more research

However, the knowledge and tools available are not always adequate to tackle existing health problems and there is a constant and never-ending need to generate new information and develop improved and more effective ways of protecting and promoting health and of reducing disease. This has always generated a dilemma for policy-makers: whether to support research that may lead eventually to improved interventions and better outcomes, at the expense of diverting scarce resources from the immediate deployment of existing knowledge. Time and again, research has demonstrated its value in the longer term. For example, in the global epidemic of polio in the 1950s, policy-makers in many developed countries were forced to make plans for the construction of iron lungs and of the hospital wards to house them. This long-term and hugely expensive approach to caring for those with chronic paralysis became obsolete with the invention of the polio vaccine and the disease is now – perhaps – close to being eradicated globally. The same applies to the research done to conclude the link between smoking and lung cancer leading now to large and sustained reductions in cancer incidence in the developed countries, while smoking incidence in many developing countries is increasing. Some contemporary examples of the continuing needs for research include:

- Growing microbiological resistance in, for example, diseases like tuberculosis and malaria
- Absence of effective treatments for diseases in low-income countries such as dengue fever
- Treatment and prevention in HIV/AIDS
- Preparedness for new/emerging infections
- Need for new knowledge about the global factors that influence health
- Need for new knowledge about local contexts, conditions and health priorities
- Need for new knowledge about social, political, economic and environmental determinants of health, especially in understanding how to increase health equity within and between countries
- Health policy and systems research – how to make the health system perform better
- Need to understand and monitor impacts of global policies on trade and of globalization on the health of individuals, family, community and countries
- Research on environmental health, the interaction between economic activity, environment and human health, which is of more and more pertinence to developing countries
- Need for new knowledge about what people need to be and to remain healthy
- Need to understand how to best use research not only for health improvements, but also for social and economic development – in an equitable manner!

This list is far from exhaustive. Thus, beyond the adoption, adaptation and application of existing knowledge, there remains a substantial need for research to create new knowledge and technologies and to translate these into effective interventions that will enable people to be healthy ... *everywhere*.

"Health research" and "research for health"

The spectrum of health research is broad and includes:

- Biomedical research
- Public health research
- Health policy and systems research
- Environmental health research
- Social sciences and behavioural research
- Operational research
- Health research as part of general "science and technology" research

However, considering the definition of health used earlier, it is evident that the range of research needed to "protect and promote health and reduce disease" is even broader than this. Indeed, it is more appropriate to speak

about "research for health" than about "health research" to recognize that the fields of interest span the relationships between health and, among many others, social, economic, political, legal, agricultural and environmental factors.

As examples one can look historically at the "sanitary period" in which rapid gains in health were made possible due to civil engineering (e.g. water, sanitation, housing) rather than through medicines and health care. More recent examples include the reduction of traffic deaths through research in the transport and health sectors combined (work and health, vision testing, but also improvements in road signs, greatly increased car and tyre safety, and speed limitation). Agricultural research is increasingly being credited not just with new products, but with ways of increasing food security. Multi-disciplinary research linking medicine and technology has improved health technologies rapidly and offers hope for early disease detection and facilities to reduce the impact of disabilities. And, in some cases, research done in developing countries to deal with specific local problems has found application in the developed world, a trend which is increasing with the expanding research capability of progressively developing nations.

It is also clear from these examples that neither "research for health" nor "health research" is necessarily a public sector task: both private for-profit and nongovernmental non-profit organizations have made research contributions to health, health equity and development.

The failure and promise of health research

The last century has seen an unprecedented improvement in human health, with half of the total gains in life expectancy in the last several thousand years having occurred in the past 100 years – as witnessed by dramatic improvements in maternal and child mortality and other health indicators.

While there are many factors responsible for this phenomenon, including improvements in living and working conditions and nutrition, there are also two successive revolutions in the health field that have played a major role. The first was a transformation in public health resulting from new knowledge about the links between the environment, hygiene and disease, which led to improvements in the quality of water, sanitation and housing in industrialized countries. The second revolution, resulting from advances in sciences such as physics, engineering, chemistry, biochemistry and medicine, was in the prevention, detection and treatment of diseases through the application of vaccines, diagnostics and drugs.

However, the resulting benefits are very unevenly distributed. Very large numbers of people in the less developed countries have up to now derived little or no benefit from the tools so far created. The reason for this is either because the products are too costly to acquire or administer in poorly developed and resourced health systems or because of "non-creation": products that are predominantly or exclusively needed in poor countries have simply not been researched and created, even though this is where the vast majority of the world's population and the largest proportion of disease and mortality are to be found. As a result of the uneven distribution of benefits, health inequities (including physical, mental and social aspects) within and between populations have increased in some parts of the developing world.

These imbalances in the global distribution of investments in health care are – again, not surprisingly – also found in imbalances in health research investment and capacities. In 1990, the Commission on Health Research for Development pointed out that most health research has been conducted in and for the health needs of higher-income countries, so that both the nature and the focus of drugs, technologies and knowledge have been less relevant to the needs of lower-income countries. Among the important aspects of the Commission's work, three in particular are highlighted here:

- The Commission drew attention to the importance of every country establishing a capacity to conduct essential research of relevance to its own needs in the health field. Subsequently, the Council on Health Research for Development (COHRED), founded in 1993 as the successor to the Commission's Task Force, has championed the evolution of Essential National Health Research (ENHR) and has supported work in more than 60 countries on the organization and prioritization of research to underpin health systems. COHRED's work on ENHR has stimulated greater attention to resourcing, managing and prioritizing health research and has led to the evolution of the concept of national health research systems (NHRS) as a comprehensive framework within which to analyse, develop and strengthen the capacities of countries to determine health research priorities and to decide on how to address them.
- The Commission made the first systematic efforts to measure the flow of resources for health research on a global scale. They estimated that, for 1986, less than 10% (in fact, closer to 5%) of the US$ 30 billion that the world spent on health research was devoted to the specific health problems of developing

countries, while 90% of the preventable burden of ill-health was to be found in these countries. This led to the concept of a "10/90 gap" in health research. The Global Forum for Health Research was established in 1998 with a mission to help close this gap. The Global Forum continues monitoring the financing of health research at the global level (more than US$ 100 billion is now spent annually) and, in collaboration with COHRED, at national levels, as well as encouraging more systematic priority setting and the focusing of attention on research into a range of neglected diseases, populations and issues.

- Recognizing the critical importance of resources if health research is to be able to fulfil its promise, the Commission recommended that every developing country should aim to spend 2% of its national health budget on essential health research and research capacity strengthening and that this should be complemented by donors allocating 5% of their health assistance to supporting these areas. Progress in implementing these recommendations has been uneven, but has recently accelerated. A few developing countries have already reached the 2% target and it has recently been officially endorsed by the Ministerial Summit on Health Research held in Mexico City in November 2004, by subsequent meetings of the World Health Assembly and the WHO's Executive Board and by ministers of 14 African countries in Ghana in June 2006 (WHO, 2006). Several donors are now contributing more than 5% of their health contributions to supporting health research and research capacity strengthening and others are making commitments to move in that direction.

Unfinished and new research agendas

The need to continue expanding the quantity and quality of research that focuses on the health problems of poorer countries and marginalized populations, including research that is done in and by these countries themselves, is driven by a combination of old and new problems:

- The persistence of communicable diseases continues to be a heavy burden in many low- and middle-income countries. This includes, in particular, diseases such as malaria that have ceased to be significant public health problems in high-income countries; a range of other vector-borne tropical parasitic diseases such as leishmaniasis, schistosomiasis and trypanosomal infections, which cause sleeping sickness in Africa and Chagas disease in Latin America; dengue, another mosquito-borne infection which is expanding its impact mainly in developing countries and for which there is, as yet, no preventive vaccine; some infections like tuberculosis (TB) that were once well controlled but are now resurging due to the evolution of multidrug-resistant forms; and new global health threats posed by recently emerging diseases such as HIV/AIDS, severe acute respiratory syndrome (SARS) and avian influenza.
- While the list of such diseases is long and includes viruses, bacteria and parasites, some directly transmitted between human beings and some indirectly via animal hosts, they share a number of important features. In particular, for this group of diseases, few effective tools exist in the form of vaccines and drugs. The tools that are available are often failing due to the emergence of resistant forms (e.g. malaria, TB), are too expensive for application in poor countries without massive international aid (for example, antiretroviral (ART) drugs for HIV/AIDS), or are difficult to administer without sophisticated and well-functioning health systems (e.g. DOTS (directly observed treatment, short course) for TB, ART drugs for HIV/AIDS). In addition, the development of new tools has often been given low priority by the private sector since there has not been perceived to be a sufficiently lucrative market for the products.
- Over the last few decades, a massive epidemiological transition has been taking place globally. Chronic or noncommunicable diseases, like cardiovascular disease, diabetes and cancer, which used to be regarded as diseases of affluence characteristic of high-income countries, have now also become diseases of poverty in low- and middle-income countries. They constitute at least half the burden of disease in many developing countries (e.g. India) and as much as three quarters in China.
- These chronic conditions, often also referred to as lifestyle diseases, are associated with a range of determinants that include inappropriate diet, obesity, lack of physical activity and use of tobacco. To a large extent, they are preventable. Once acquired, their severity of impact can be lessened by a combination of changes in behaviour and treatment – which often needs to be lifelong – with drugs. While many developed countries have successfully lowered the incidence of these diseases in recent years, the adaptation of effective prevention and treatment measures to conditions and contexts in poorer countries has barely begun and substantial effort will be required to accomplish this.

- Another way of viewing this is to look at the population changes or demographic transition. The oldest age groups are, by and large, the most rapidly growing groups in populations in both developing and developed nations. Chronic and noncommunicable conditions are, therefore, bound to become key concern areas in all low-income countries in the very near future.
- Lower-income countries are experiencing a large and growing burden of injuries. In particular, as transport becomes more mechanized, rates of road traffic injuries are escalating. Unlike in more developed countries, the injuries very often involve collisions between powered vehicles and cyclists or pedestrians. Many developed countries have been able to reduce substantially their rates of road traffic injuries by the introduction of compulsory seat belts and crash helmets, reductions in speed limits and the enforcement of strong legislation on drinking alcohol and driving. Deaths and permanent injuries caused by road accidents have also been reduced by the development of effective and rapid emergency response and treatment. Much less attention has been paid to adapting these lessons or to devising new and different approaches that are relevant to the different traffic conditions and limited resource settings found in lower-income countries.
- Across the world, the emphasis of health systems and services – and of the research associated with these fields – has been mainly on the prevention and treatment of diseases. Recently, a new conceptualization of global health has begun to emerge that is finally more in tune with the broad-ranging definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease". Whereas, in the past, we have generally failed to understand or support what people need to be healthy, new approaches are now beginning to address this gap, such as the work of the WHO Commission on the Social Determinants of Health and the principles developed in the stream of international conferences and charters on health promotion that was initiated in Ottawa in 1986. These efforts are contributing to defining what needs to be done to really promote health, recognizing that there must be a shared responsibility between individuals who may have, in reality, very few choices, and governments who must create and support the conditions necessary for the health of their people.
- This new agenda has a dual character. It is global in its scope, in the nature of the principles that underpin it and in some of the actions that need to be taken to regulate, for example, the movement of harmful substances, pathogens and practices. At the same time, it is at the national and local levels that effective action must be taken to provide each individual with the opportunity to achieve their desired health and well-being. The challenge for research, at both global and national levels, is to help uncover, understand and control the relevant determinants and to assist in ensuring that the application of this knowledge is equitable and does not itself create new gaps. Thus, the newly emerging conceptualization of global health is bringing important recognition of the connectivity between global and local health problems and of the requirement for cross-sectoral action in many fields, supported by research. Delivering better health is increasingly recognized to be the responsibility not just of the health sector, but of all government and of communities, families, individuals and the civil society organizations that represent them, and requires the active involvement and acceptance of shared responsibility for health by all stakeholders in all sectors.

New trends in health research: opportunities and threats for health equity

The revolution in information and communication technologies (ICTs) has also laid the basis for major advances in genomics and biotechnology. The capacity to read, store and compare the millions of pieces of information that make up the genomes of each organism on the planet has already resulted in a greater level of understanding of disease processes. Combined with the newly emerging techniques for exploring and manipulating matter on a "nano" scale, new opportunities are opening up for developing preventive, diagnostic and curative technologies, drugs and methods.

These new technologies hold great promise for improving health and reducing health inequities of people everywhere, but this will only happen if they are developed and applied to the problems of all populations. If the patterns of the last century are repeated, they will work only for the better-off and those in more privileged positions, with a resulting increase in inequities within and between populations. Some possible applications of the new technologies also pose potential threats to particular populations, groups or individuals and these need to be explored and debate stimulated on how to avoid them.

The successes and failures of health movements and interventions over recent decades – including the primary health-care approach, Health For All, interventions for family planning and population control and, most recently, dealing with the HIV/AIDS pandemic through the Global Fund to Fight HIV/AIDS, Tuberculosis and

Malaria and the 3 by 5 Initiative – have all pointed to the central role that health systems play in making known and new interventions work. By and large, newer interventions against global conditions are becoming increasingly "system intensive". They make substantial (and often competing) demands on health system capacities, including health research capacity. Health systems provide the crucial framework for delivering better health services and making these more accessible and affordable – and health systems need to be strongly supported by health policy and systems research and operational research. Yet, a recent review by the Alliance for Health Policy and Systems Research pointed to a twin deficit: 1) the whole field of health systems research is grossly under-financed; and 2) only a tiny fraction of the research carried out in this field is being conducted in or for the needs of less developed countries, even though this is where the systems and policies are weakest and need most attention.

Good health research needs good health research systems

Health research is clearly an indispensable component of growth and development of people and nations. Whether private or public, for-profit or not-for-profit, health and medical research contributes to health both directly (through the therapies, interventions, diagnostics, technologies and quality improvement in health-care delivery that result from research) and indirectly, through the potential impact of improved health on economic activity, because of the prospective economic benefits of health research itself and because it assists in creating and maintaining a culture of evidence and reason.

Health research is usually viewed in the narrow confines of researchers, research projects and research institutions. Public sector funding, if it is available, is usually provided to institutions, which disburse it through various mechanisms to researchers to conduct specific projects. There are few countries and institutions where the wider context of research for health is considered once a parliamentary or similar public sector grant has been made. Where private sector, for-profit funding is concerned, the potential profit is added to the list of criteria by which resources are allocated. And, in the case of private, not-for-profit research, the specific mandate of the fund becomes the added criterion. As a consequence, health research in rich and poor countries alike is often a collection of disparate projects, many of which may not have any direct link to the country's health research priorities. Health equity related research or equity and development criteria in resource allocation are rare and, consequently, even health research that results in efficacious new interventions is unlikely to contribute to the reduction of inequity in society other than as a side effect. Finally, even if research provides practical answers to health problems, such as new drugs or diagnostic methods, such findings rarely have immediate impact on the health of the poor. In fact, we all know too well that effective therapies are available for those conditions that are still causing most ill-health and deaths in the developing world.

Yet, it is within the mandate and power of governments to coordinate societal resources in ways that optimize health and the economic benefits of health research and to employ such resources in an equitable manner. Health benefits should specifically address the health needs of vulnerable groups in a population. The best chance a government has to optimize the impact of health research and use its full potential in health and development is by considering researchers, research projects and research institutions in the context of NHRS. Only then can the many other components needed to make health research work for everyone be made explicit, influenced and evaluated.

Health research systems

The concept of health research systems attempts to provide a framework for the understanding and guidance of the overall research efforts in nations and societies. In its broadest sense, health research systems include all efforts that are directly linked to and have an effect on the way in which research is done and how it impacts on health. For example, in the traditional view of researchers, research projects and research institutions, the following actors are usually not considered or are considered only at a late stage of the research: the media (which translate research findings into publicly understandable language); the community (specifically, organized civil society); development and business sectors (for future action); the health system (who should implement findings?) and, indeed, the policy-makers (whose responsibility it will be to ensure the implementation of health services). Viewing the research efforts in and of societies as a health research system should lead to a more comprehensive analysis of the components and actions needed to get from a good research idea to an effective health action that contributes to improving health and reducing inequity.

Such a health research system is complex, not under the control of any one agency or office, and often not well defined. In the science and technology environment, much more effort has been made to define and "manage" such complex systems and to guide a nation's research effort to clearly defined goals. Mostly, such goals are linked to strengthening some parts of research capacity that would give the country a technological – and

anticipated economic – advantage. In health research, far fewer such efforts have been undertaken, perhaps in part because the health research system is less well defined and because the health sector usually seen as different from other mainstream sectors.

Components of health research systems

COHRED attempted a first definition of national health research systems by proposing four generic functions to the International Conference on Health Research for Development in 2000: 1) stewardship of the system; 2) resourcing the system; 3) building capacity to conduct essential research; and 4) the conduct of research itself, which was later divided into generation and utilization of knowledge.

This broad view was narrowed by the following definition of health research systems proposed by the WHO: "the people, institutions and activities whose aim is to generate detailed and reliable knowledge that will be used to promote, restore or maintain the health status of populations. Our definition includes all the actors involved primarily in knowledge generation in the public and private sectors." One purpose of this definition is to provide a boundary to the system. However, by limiting the research system only to those generating knowledge, the definition excludes the many other parts of the system that are required to ensure the generated knowledge is relevant and to make the connections from knowledge generation to effective health action.

A better understanding of the scope of NHRS is provided by describing its core functions:

- Stewardship and governance
- Financing
- Capacity building
- Knowledge generation or translation
- Knowledge utilization

A framework using these broad functions of the system as a starting point will enable a more comprehensive mapping of stakeholders, key activities, core processes and outcomes than simply considering the knowledge producers. While a detailed consideration of these core functions is outside the scope of this text, it is clear that a systematic approach to identifying each component and its activities is more likely to make research one of the key development tools available to countries to improve the health of the population, health system efficiency and impact, and development in general. In the box below, some of the crucial parts of each of the functions of the research system are provided as illustration, not as an exhaustive list.

Stewardship and governance

- ✓ Is there a research management policy/structure/office where data on national health research activities are systematically collected, analysed and disseminated?
- ✓ Who are the "stakeholders"? Is there representation from "users", communities, organized civil society? And how do they input into the governance of public resources? How are the interests of the poor represented? How do public and private sector research link?
- ✓ Is there a national listing of priority health and health system problems? Is this list established in a credible manner, updated, communicated and used for policy decisions?
- ✓ To whom are researchers and research institutions accountable? To the taxpayer, to vulnerable communities?
- ✓ Are there data on health impact and potential economic benefits of health research?
- ✓ The creation of a culture of research in countries is an important part of effective stewardship.

Financing

- ✓ How is health research financed? Is there a breakdown into public, private, foreign, local?
- ✓ Is there a monitoring mechanism for government expenditure on health research (target 2% of programme budgets) and for foreign aid expenditure on health research (target 5% of programme budgets)?
- ✓ Are innovative mechanisms for obtaining funding explored? Both locally and internationally?
- ✓ Are there gaps in research activity? Is there a focus on the basis of lack of financing? If so, what is done to fill these?

Capacity building

- ✓ Capacity building can happen at the level of individuals, institutions, the health system and even the wider government and environment (including, for example, the capacity to govern national health research). Is there a place where such analysis is systematically done? Are its results translated into capacity building efforts?
- ✓ Is there an assessment of need and an ability to address this need, through both local and international means?

Knowledge generation or translation

- ✓ While knowledge generation relates to new knowledge, the concept of "knowledge translation" relates to the ability of a country to understand the importance of research done elsewhere and to use it towards its own health benefit.
- ✓ Is there a system of systematic scanning and interaction with similar bodies elsewhere in the world to ensure that countries make the most of available knowledge and expertise?

Knowledge utilization

- ✓ Ultimately, knowledge needs to translate into meaningful health action. The chain from available knowledge to effective implementation includes many players, all of whom contribute and without whom action may be of reduced impact or not happen at all. From the media (popularizing scientific publications and knowledge) and educational institutions (ensuring continuous updated curricula and capacity for students to update themselves) to health system transformation to include new protocols/guidelines/diagnostics/therapeutics, political action for change and many more: unless systematically mapped and addressed, available knowledge will remain suboptimally used, leading to unnecessary suffering and deaths.

National health research systems

It is central to the concept of health research systems that effective control over health research can really only be executed at national levels, where political mandates for expenditures and national action rest. Despite the talk about "global architecture of research", the existence of national health services with their own research institutes and a private sector that has cost, quality and efficiency research carried out regularly, it is at the level of national governments that health research can be guided to address health improvement for the poor, health equity and development, and where research efforts can be steered (through many mechanisms of financing and legislations) towards achieving health, equity or internationally agreed targets like the Millennium Development Goals.

There is an additional factor of great importance. Although research is often portrayed as neutral or objective, knowledge and the road from knowledge to effective health action are certainly not. For that reason, research systems need to take into account the specific nature, culture, history, capabilities and preferences of countries. In short, research systems are highly country-specific. There is no general system that works; there are only concepts and values that need translation into local realities.

Developing countries have another, crucial reason to build strong health research systems. They need credibly established and updated health research priorities, a health research policy framework, a health research management mechanism and a system of communicating this to donors and research sponsors. Only then can Northern partners be enabled and encouraged to align their investments in health research with national priorities and harmonize their aid with that of others to be able to enhance capacity building potential and sustainability of research for health programmes.

Hence our emphasis on the importance of national health research systems when considering stimulating health research in or for developing countries.

We recognize that this is no small task, for it demands a coherent and planned approach within and beyond the health sector and involving several branches of government, nongovernmental stakeholders and international development partners. The challenge is for governments to develop clear overall national research policies that include research for health and to take the lead in encouraging the relevant stakeholders to engage in the collective approach.

Research for health: how to make it work

Health research has resulted in many successes. Some have been mentioned above, including the development of many vaccines, e.g. polio; improved drugs; much better diagnostics with ever fewer invasive interventions; and so on. Most other research for health is less well known as it involves other sectors, for example reduction of traffic deaths, greatly improved life expectancy in most countries partly due to research derived advances in nutrition and public policy-making. Below are just some key examples of research done in developing countries that have led to major improvements – sometimes at a global level.

Why national health research?

National health research conducted in the South has had an important impact on discovering diseases, developing treatments and improving health policies that are relevant to their health needs. Thanks to national health research:

- ✓ **Brazil** discovered Chagas disease
  In 1909, Carlos Chagas discovered American trypanosomiasis (Chagas disease).
- ✓ **India** developed oral rehydration therapy (ORT)
  In 1953, H.N. Chatterjee published the first human study of ORT.
- ✓ **Chile** led the development of the copper intrauterine contraceptive device (IUD)
  In 1969, Jaime Zipper Abragan and Howard Tatum developed the first copper IUD.
- ✓ **China** developed artemisinin for the treatment of malaria
  In 1972, Chinese researchers isolated artemisinin from a traditional Chinese remedy for fever.
- ✓ **Cuba** developed the first meningitis B vaccine
  In 1991, V.G. Sierra and H.C. Campa published the first randomized controlled trial of their meningitis B vaccine.
- ✓ **Thailand** built up the evidence to inform its national health reforms
  Health research and good research management played a pivotal role in the reform of the Thai health system. Research is one of eight pillars of the new system and is considered central to efforts to implement, monitor and evaluate further reforms.
- ✓ **Sudan** altered its malaria treatment protocol
  Using national research on resistance to chloroquine, Sudanese policy-makers altered their national programme in 2004 to provide artemisinin-based combination therapy as first and second line treatments.

Some countries are known to have substantially invested in health research capacity over many years, with demonstrable benefits (e.g. Cuba, India, Republic of Korea, South Africa). Others are rapidly following (among them, Brazil, Chile, China and Thailand), while yet others are learning from the successes of these early investors and are gearing up to promote health research efforts through direct support and encouraging conducive political and economic environments.

Development without investment in health research is – apparently – not possible. Where are you in this spectrum?

Key messages in this policy brief

- Health is an essential ingredient and consequence of development.
- Research for health can make a major contribution both to health and to more general development.
- In many countries, however, the benefits of health research are not optimized due to low investments, absence of a culture of evidence-based decision-making or lack of capacity.
- Countries that have invested consistently in health research and general science and technology are now advancing rapidly in health and in economic development.
- International aid needs to ensure that research for health is part of its total package and is fitted in a manner that enhances national health research systems.
- Specialized or vertical programmes like the Global Fund to Fight AIDS, Tuberculosis and Malaria or the 3 by 5 Initiative must include a component of research and research capacity strengthening, as a means to develop local ownership and sustainability.
- Health equity can easily be forgotten again. In building up research capabilities in developing countries, research systems need to ensure that advances will benefit everyone.

What can be done?

Below is a summary of issues for decision-makers and health research sponsors.

By countries

- Ensure that priorities and resources for health research are related to need, especially of the poor, and are informed by evidence.
- Promote the development of a culture of research.
- Encourage a systematic approach towards health research and, more broadly, towards systems of research for health.
- Negotiate with external funders, including private sector research, to find a balance between their interests and national health research needs.
- Spend time and resources on developing national priorities, using an inclusive process that is communicated and updated regularly. Make sure that national and international stakeholders know about these priorities so they can align with them.
- Allocate 2% of health programme budgets to operational and evaluative research of these programmes.
- Request that donors match this with 5% of their health programme budgets.
- Get help and support from countries that have already travelled this road.

By research sponsors/donors/collaborators

- Consider very critically sponsoring research in countries unless the research is aligned with national priorities for health research (including priorities for health research system capacity building).
- If there are no clear, credible health research priorities, support the country in getting them.
- Allocate 5% of health programming to support research. Do this in ways that strengthen the building of local institutions, not supporting foreign consultants.
- Encourage South–South networking: it makes aid more effective.

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